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Next Week: St. Lawrence Seaway

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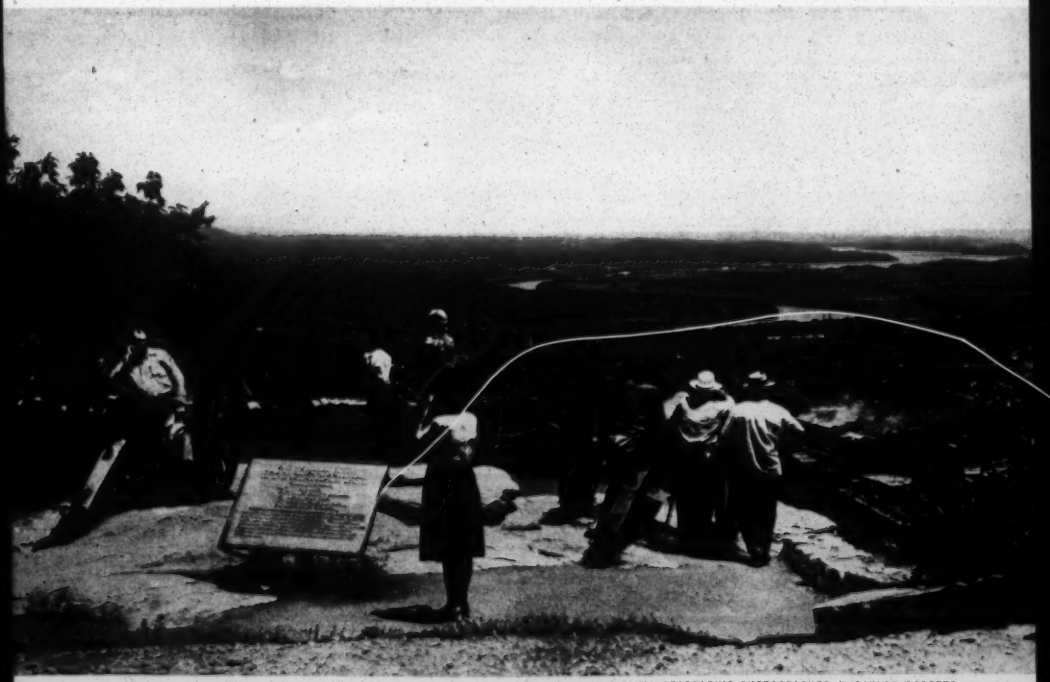


NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS

LOOKOUT MOUNTAIN—Seven States Can Be Seen from These Bluffs Where a Battle Once Raged. Below Spreads Chattanooga in the Heart of the Tennessee Valley

miles long, 106 miles wide, Tennessee is neatly divided into three parts by the looping Tennessee River. East Tennessee, land of tumbled, forested mountains, extends from the Great Smokies, marking North Carolina's border, to the river and its tributaries. The Tennessee River dips into northern Alabama, curves across it, then changes its mind to swing northward and cut once more through Tennessee.

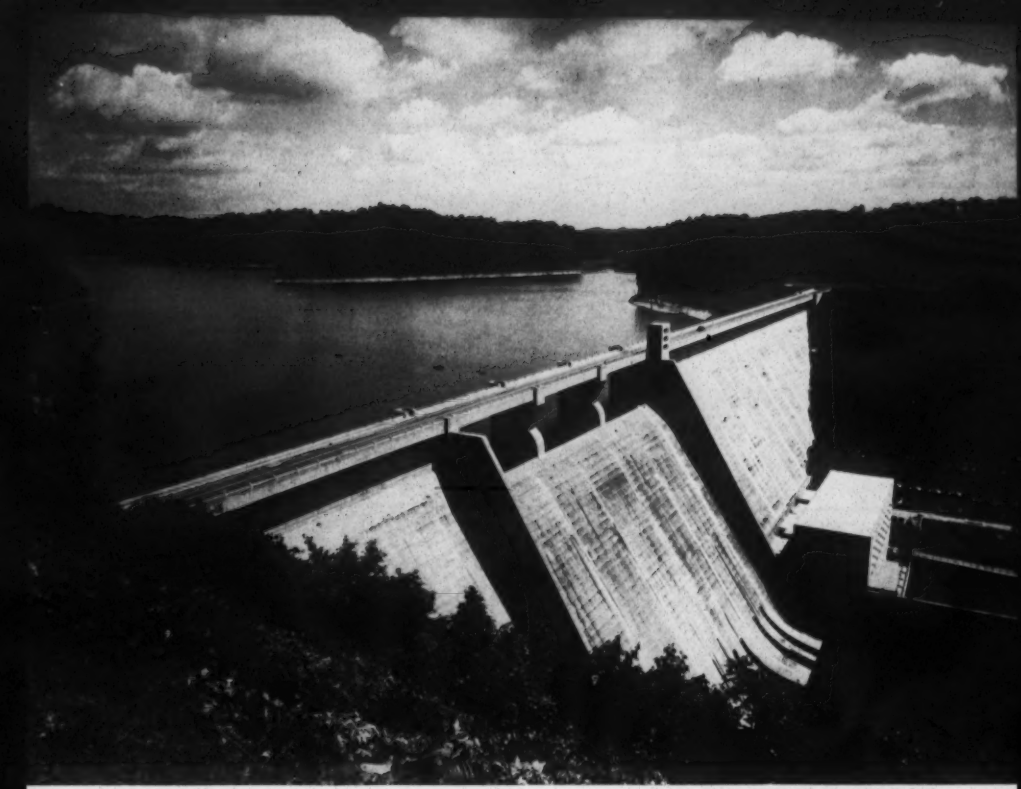
Its loop contains Middle Tennessee—rolling hills of the Cumberland Plateau, dented by the Central Basin. West of the river lies West Tennessee, flat and fertile, sloping gently to the Mississippi. In land, climate, people, West Tennessee is a part of the Mississippi Valley. Cotton from its fields funnels through Memphis, the state's largest city, the world's largest cotton market. It serves as airline, highway, and rail junction as well as river port.

In contrast, East Tennessee is born of the Appalachian Mountains. Hill people scratch scanty livings from small farms, sometimes lug bags of corn on muleback to a moss-grown mill for grinding. Yet among forgotten pockets of pioneer life, industries have sprung up. Around Knoxville's factories lie coal fields, varied mineral deposits. Alcoa with its aluminum plant and Oak Ridge with its atomic laboratories are near by.

In blue-grass country of Middle Tennessee, blooded horses, mules, beef cattle graze amid fields of corn and tobacco. Jasmine-scented Nashville, state capital, retains the flavor of ante-bellum plantation days. Andrew Jackson, first of three Tennessean Presidents (others: James K. Polk, Andrew Johnson) lived at The Hermitage just up the Cumberland River.

IN THE MOUNTAINS, OLD WAYS LINGER—These Hillmen Know a Cabin Roof Should Be Made of Hand-Riven Boards. With Pioneer Skill They "Rive" Slats from White Oak

PAUL A. MOORE, TENNESSEE CONSERVATION DEPT.



PAUL A. MOORE, TENNESSEE CONSERVATION DEPT.

NORRIS DAM: TVA BULWARK—Nearly All Tennessee Valley Farms Get Electricity from This Vast Federal Project. Norris Helps Power Oak Ridge Experiments (below)

Tennessee

NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

WHITE-FROCKED scientists shove a radioactive uranium slug into an atomic pile (right). A few miles away, a massive dam plays its part in a tremendous river-taming operation. Another few miles from these supermodern developments, weather-beaten mountain cabins stand in deep isolation, each in its forest clearing. All but cu off from the world, families live nearly the same lives as their ancestors who first filtered through the high passes from east-coast colonies.

Thus old and new mingle in Tennessee. Physically, too, this southern state contains distinctly different regions. A narrow parallelogram 432

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100th Anniversary

Victoria Cross

BRITISH INFORMATION SERVICE

THE British sergeant looks uncomfortable. Field Marshal Montgomery is pinning a red ribbon to his chest—a simple token that will make people turn and stare. All because, during World War II, the sergeant, alone, calmly put three German machine gun posts out of action.

The sergeant's sudden blaze of heroism won him Britain's supreme award—the Victoria Cross. He is one of only 1,344 men who have won the decoration (many of them posthumously) since Queen Victoria created it 100 years ago. Next month some 400 living VC holders will gather in London to commemorate the anniversary.

Gallantry in action during the Crimean War of 1854-56 made Queen Victoria realize that Britain needed an award which any soldier could win. Orders of Bath or Garter could be bestowed on those of high birth. The poet laureate could eulogize "The Charge of the Light Brigade." But the deeds of Private John Bull went unacknowledged. The VC corrected this injustice. The first ones were cast from the bronze of captured Russian guns, and this novel raw material is still used today. Few medals are struck. For every VC winner of World War I, some 3,000 Germans received the Iron Cross.

BRITISH INFORMATION SERVICE

Though designated only for military and nursing personnel of Britain, its dominions, colonies, dependencies, and protectorates, the VC has gone to two Danes, a German who served with British forces at Balaklava, and the American Unknown Soldier. Three men won it twice.

The simple cross with its curt inscription, "For Valour," belongs, as a Prince of Wales once said, to that "very limited circle of men who see what has to be done and do it at once at their own peril, and, having done it, shut up like the proverbial oyster."

UMI

PAUL A. MOORE, TENNESSEE CONSERVATION DEPT.

BUSY NASHVILLE STRADDLES THE CUMBERLAND—State Capitol, Standing Alone, Shows Grecian Columns Typifying the Cultural Atmosphere of This "Athens of the South"

Admitted to the Union in 1796 after its eastern counties tried establishing the state of Franklin, Tennessee was settled fast, produced heroes like Davy Crockett who later took their frontier talents to Texas.

After the disaster of Civil War, farmers struggled to recover. But over-farmed soil often eroded, washed away in spring floods. Now 30 major dams of the Tennessee Valley Authority check floods, send cheap electricity to farms and new factories, boost soil conservation by the example of government-owned TVA lands.

PAUL A. MOORE, TENNESSEE CONSERVATION DEPT.

National Geographic Map Southeastern U. S. (paper 50¢, fabric $1)

***Magazine*—May, 1939,** "Highlights of the Volunteer State" ($1)

DIXIE BLUE-BLOODS
Tennessee Walking Horses Boast Long, Smooth Gaits

HOW ABOUT GLACIER?

EACH summer 600,000 refugees from the nation's heat and traffic flock to the cool, lake-studded mountains of Glacier National Park. But so roomy is this second largest of the great public-owned playgrounds of the West (only Yellowstone is larger) that it is easy to find yourself all alone in an unspoiled wilderness scene like the one at the left.

Nestled against the Canadian border and straddling the Continental Divide in northwest Montana, Glacier appeals strongly to those who like to hike and ride. For them, the 1,000 miles of trails makes a much more tempting statistic than the 70 miles of paved highway. George W. Long, writing in the May, 1956, issue of *The National Geographic Magazine*, describes the exhilaration of daily hikes. "I liked the quick friendships, the easy banter, the excitement of discovering many times a day what lay beyond the next ridge. I relished the picnic lunches on high, windy passes or in meadows deep with flowers, and the draughts of clear, ice-cold water drunk prone from a rushing mountain stream." Horseback trips open farther vistas. Judy Long, right, is across the border in Canada's adjoining Waterton Lakes National Park.

Contrary to popular belief, Glacier Park was not named for its 60-odd living glaciers but for the fact that a huge Ice Age sheet of ice carved its rugged scenery. Grinding and tearing, a half-mile-deep icecap bulldozed wide U-shaped valleys and rocky amphitheaters. It sculptured the mountains, scooped out lake bottoms, and dammed streams.

NATIONAL GEOGRAPHIC PHOTOGRAPHER KATHLEEN REVIS

NATIONAL GEOGRAPHIC PHOTOGRAPHER KATHLEEN REVIS; DRAWING BY STAN JENNINGS

Hikers Beside Josephine Lake Taste the Early Morning Stillness of Highland Wilds. Rocky Ramparts Wall off the World's Turmoil in Glacier National Park

inhabitants have few legends concerning the images or their own background. Their home, far from other land, lies 2,300 miles west of Chile and 1,200 miles east of Pitcairn Island. Sheep and cattle grazing on slopes give the appearance of a mid-ocean ranch. Grass covers even the rocky summits of extinct volcanoes, highest of which rises 1,700 feet above the sea. There is hardly a tree on the island. Simple, fun-loving, and easy-going, the natives live mostly in one village and enjoy an almost perfect climate. They grow sweet potatoes, bananas, and sugar cane.

Rain captured in pools provides the only water. Sometimes it forms underground channels, and flows into the sea below high-water mark. When islanders find these outpourings, they collect the fresh water before it mingles with the brine of the sea. This feat was a puzzle to early voyagers, who reported that the natives drank sea water without harm.

Easter Island boasts mysteries other than the big heads. Wooden tablets bear inscriptions never deciphered. These are said to hold similarities to the alphabets of dead civilizations in India and to the hieroglyphics of ancient Egypt. A connection with the Incas of South America has been suggested by the stonework of funeral monuments (below).

The island measures less than 30 miles around. It may once have had 6,000 inhabitants. When Dutch Admiral Jacob Roggeveen discovered it on Easter Day, 1722, population was about half that figure. In 1862, pirates kidnapped 1,000 islanders to slave on the guano isles of Peru. Chile formally took possession in 1888, now names Easter a national park.

WERE THE INCAS HERE?—Masonry of This Ahu (burial structure) Resembles That of Ancient Peru, Provides Ground for Theory of Inca Origin of Easter Island's Civilization

FATHER EDMOND STOCKINS

Easter Island's

Stony Faces

HERMANN MARTINI

SUCH is the power of suggestion that the rare visitors who reach remote Easter Island often become depressed and unhappy. Reason: everywhere they look they see one or more of these huge graven images (right) gazing dejectedly across the volcanic wastes with faraway, sorrowful, hangdog expressions.

But scientists who come to this Pacific outpost see only a happy hunting ground for archeological research. Who carved these narrow-browed, deep-eyed, thin-lipped statues, and why? There are 260 of them, some more than 30 feet tall. They apparently were easily hacked from hardened volcanic ash. Originally, as though in comic relief, they wore red tufa hats.

How did the primitive sculptors move and raise the 50-ton heads to up-right positions? There was no wood for rollers and but little fiber for rope. Experts say that 1,000 men might move one of the smaller statues. Budging a larger one would require incredible man power. Why did the mysterious people suddenly abandon their work, leaving nearly 150 unfinished statues in the quarries (left)? Where did they go? Are today's scanty islanders their descendants or later immigrants?

FATHER EDMOND STOCKINS

Easter's Polynesian

lindrical shape. They crimp on bottoms (drawing, page 348), but leave tops for food canners to affix. Containers designed to hold carbonated soft drinks need stronger seams. Those used for products other than foods vary according to duty. Paint cans have special lids. Big gasoline tins, used largely in Asia, are unpainted so that natives may adapt them to other jobs. They serve as water buckets, lamps, cooking pots, charcoal stoves. Children's toys are sometimes made from them.

AMERICAN CAN CO.

MACHINE TESTS CANS FOR LEAKS—Solder Makes Side Seams Airtight. A Rubber Compound Seals Bottoms Then Air Blasts into Each Can Searching out Any Flaws

Probably the biggest "can" is one designed to hold aircraft engines. Sealed with bolts, it will keep them safe and dry even if dropped into water. But the vast majority of cans preserve food.

This massive industry descends from 14 years of experiments by Nicholas Appert, French confectioner. In 1810 he described his method of keeping food fresh by packing it in glass jars, cooking it, corking it tight. Without knowing it, Appert killed bacteria that cause spoilage. Napoleon's soldiers filled their knapsacks with his jars, knowing they'd eat well.

Britain's Peter Durand patented a tin-coated canister to replace fragile glass. Tinned supplies went to British servicemen. Captain W. E. Parry of the Royal Navy took some on his third expedition to find a northwest passage. Eighty-seven years later, two of his tins were opened—one of pea soup, the other of beef, both as tasty as ever.

Americans adopted Appert's idea and Durand's canister. They began preserving seafoods, fruits, then vegetables. Civil War soldiers ate canned food. Every western frontier town had its mound of old tins just off Main Street.

Canning plants now cover the nation, buy more than half the total tonnage of all United States vegetable crops. Canners select farm produce, often do the harvesting. Their end product: some 20,000,000,000 containers of foods each year, valued at about $4,000,000,000.

UMI

NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS

TIN CANS FOR TOMORROW—Malayan Workers Stack Gleaming Ingots of Tin. They Mine about a Third of the World's Supply. Bolivia Is the Second-Biggest Producer

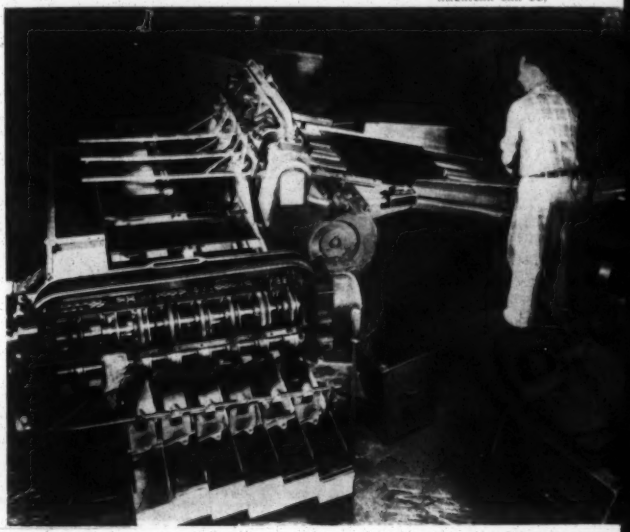
THE Tin Can

EVERYDAY WONDERS, NO. 8

SAY "tin can" to mother and she doesn't think of tin or of a can, but of food. She sees well-lined supermarket shelves, and empty gaps in her own cupboards. But without tin her meals would not be so tasty; in fact, many would be spoiled before reaching the table.

Tin has long served to line metal containers. Tasteless, unaffected by contact with food, it is applied to the can's steel "body blank," usually in an electrolitic bath. But the proportion of tin has dwindled to only two percent for acid foods, less than one percent for others. Can makers foresee a day when it will vanish entirely.

AMERICAN CAN CO.



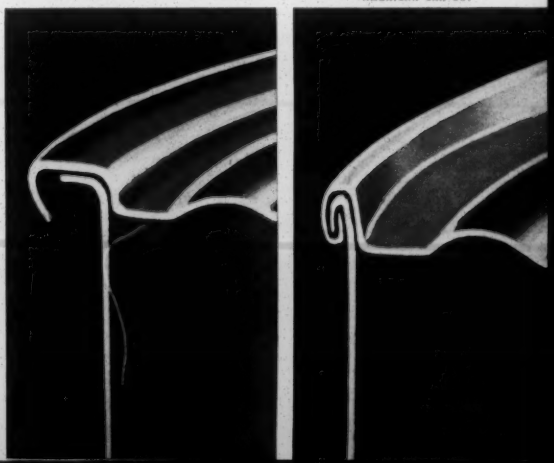
Manufacturers cut thin tin plate into body blanks, right, then stamp, bend, and "bump" blanks into cy-

NATIONAL CANNERS ASSN.

IN SURGICAL CLEANLINESS, CANS ARE FILLED—Wearing Rubber Gloves, Girls Plop Peeled, Washed Apricots into Sterilized Tins. Syrup and Water Will be Added

The typical plant lies in a rural farming community. Its specialty, let's say, is peas, second only to sweet corn in national popularity of canned vegetables. At harvest time canners send pea cutter-loaders to the fields to chop vines from roots. Pea viners shake peas from pods. Then, inside the clean, airy factory, peas are washed, graded according to size, and either dunked into hot water or blasted by live steam in a quick precooking operation known as blanching. Purpose is to expel gases, hold flavor and color, and, with vegetables like spinach, to wilt them so they'll fill a can.

On another conveyor system, freshly made, empty cans are washed, then filled with peas, plus salted water. The lid is crimped into place to insure a vacuum. In batches, filled cans are cooked. Quick cooling stops the cooking process. High-speed labeling machines do their job, then packing machines stack cans in cartons. Trucks whisk them to market. Mother pounces on them to fill that meager cupboard.

ENDS ARE CRIMPED with Double Seams; Bottoms Go On at Factory, Lids at Canning Plant

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